



This document is scheduled to be published in the Federal Register on 11/17/2011 and available online at <http://federalregister.gov/a/2011-29640>, and on FDsys.gov

Billing Code 4210-67

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

24 CFR Part 905

**[Docket No. FR-5507-P-01]
RIN 2577-AC84**

Public Housing Energy Audits

AGENCY: Office of the Assistant Secretary for Public and Indian Housing, HUD.

ACTION: Proposed rule.

SUMMARY: This rule proposes to revise HUD's energy audit requirements applicable to HUD's public housing program for the purpose of clarifying such requirements, as well as identifying energy-efficient measures that need to be addressed in the audit and procedures for improved coordination with physical needs assessments. In addition, the rule moves the energy audit requirements to a different part of HUD's title of the Code of Federal Regulations.

DATES: **Comment Due Date:** [Insert date 60 calendar days from the date of publication in the FEDERAL REGISTER].

ADDRESSES: Interested persons are invited to submit comments regarding this proposed rule to the Regulations Division, Office of General Counsel, Department of Housing and Urban Development, 451 7th Street, SW, Room 10276, Washington, DC 20410-0500.

Communications must refer to the above docket number and title. There are two methods for submitting public comments. All submissions must refer to the above docket number and title.

1. Submission of Comments by Mail. Comments may be submitted by mail to the Regulations Division, Office of General Counsel, Department of Housing and Urban Development, 451 7th Street, SW, Room 10276, Washington, DC 20410-0500.

2. Electronic Submission of Comments. Interested persons may submit comments electronically through the Federal eRulemaking Portal at www.regulations.gov. HUD strongly encourages commenters to submit comments electronically. Electronic submission of comments allows the commenter maximum time to prepare and submit a comment, ensures timely receipt by HUD, and enables HUD to make them immediately available to the public. Comments submitted electronically through the www.regulations.gov website can be viewed by other commenters and interested members of the public. Commenters should follow the instructions provided on that site to submit comments electronically.

Note: To receive consideration as public comments, comments must be submitted through one of the two methods specified above. Again, all submissions must refer to the docket number and title of the rule.

No Facsimile Comments. Facsimile (FAX) comments are not acceptable.

Public Inspection of Public Comments. All properly submitted comments and communications submitted to HUD will be available for public inspection and copying between 8 a.m. and 5 p.m. weekdays at the above address. Due to security measures at the HUD Headquarters building, an advance appointment to review the public comments must be scheduled by calling the Regulations Division at 202-402-3055 (this is not a toll-free number). Individuals with speech or hearing impairments may access this number via TTY by calling the Federal Relay Service, toll-free, at 800-877-8339. Copies of all comments submitted are available for inspection and downloading at www.regulations.gov.

FOR FURTHER INFORMATION CONTACT: Jeffrey Riddel, Director, Office of Capital Improvements, Office of Public and Indian Housing, Department of Housing and Urban Development, 451 7th Street, SW, Washington, DC 20410-8000; telephone number 202-402-

7378 (this is not a toll-free number). Hearing- or speech-impaired individuals may access this number through TTY by calling the toll-free Federal Relay Service at 800-877-8339.

SUPPLEMENTARY INFORMATION:

I. Background

Because of the increasing importance of energy conservation, HUD is taking a more proactive approach toward encouraging energy efficiency in its housing programs. In order for public housing agencies (PHAs) to improve their capital planning processes, HUD determined that there is a need for stronger energy audit data.

Under existing regulations, all PHAs must complete an energy audit for each PHA-owned project under management at least once every 5 years. The existing regulations also require that standards for energy audits be equivalent to state standards. However, state standards for energy audits are variable or nonexistent (see, for example, the map of state energy codes by the Department of Energy at <http://www.energycodes.gov/states/>). Accordingly, it is HUD's view that energy audit standards present an area where additional guidance will produce more useful results.

In this rule, HUD proposes the energy conservation measures (ECMs) that a PHA must consider at a minimum when performing an energy audit. This rule also proposes certain minimum qualifications for energy auditors procured by PHAs to perform energy audits.

While this rule proposes ECMs that must be considered, as well as certain standards for energy audits and minimum qualifications for energy auditors, HUD specifically seeks public comment on whether there are other standards and qualifications that HUD should consider adopting.

HUD will be publishing separately a proposed rule on physical needs assessments (PNAs) that will require the completion of PNAs in conjunction with energy audits in order to integrate the audit properly with the PNA. The PNA rule proposes to require data derived from the energy audit to be included in a PNA, to facilitate the identification of cost-effective ECMs. ECMs also include water-related efficiency measures. If a PNA and energy audit are performed together, there could be cost savings to PHAs to the extent that many of the same components are reviewed for each. Through this rule and the PNA rule, HUD seeks to have PHAs move toward coordinating the performance of PNAs and energy audits with each other, to maximize the effective use of this type of information.

HUD specifically seeks comments from PHAs and other interested parties as to an appropriate time frame for performance and submission requirements.

Coordination between an energy auditor and PNA provider is considered to be important in the capital improvement decision-making process. As the consulting industry that services PHAs and the public housing program is introduced to coordinated or integrated PNAs and energy audits, the costs associated with performing both of these assessments may be reduced. Since energy conservation products are often newer technology whose prices tend to be reduced over time and because utility costs are more volatile than general costs, 2 years is considered by HUD to be the maximum time frame between the performance of an energy audit and a PNA that maintains cost and pricing alignment. In addition, coordination between an energy auditor and PNA provider is considered to be important for the evaluation of technical issues in the selection of component products and the sequencing of improvements. Coordination of the timing of these activities may reduce the possibility of additional cost to the PHA for consulting services outside of the contract cycle of professional providers.

HUD is interested in receiving feedback concerning the feasibility of requiring PHAs to coordinate the performance of energy audits and PNAs. HUD specifically invites comment on the potential benefits, feasibility, or challenges of preparing energy audits in conjunction with PNAs. HUD also specifically seeks public comment on how quickly energy audit information becomes obsolete for cost projection and strategic planning in a PNA.

II. This Proposed Rule

A. Overview of Changes

This proposed rule moves the regulations pertaining to energy audit requirements, which are currently codified in 24 CFR 965.302, to 24 CFR 905.300(b)(10) - 905.300(b)(15), and clarifies HUD's requirements for energy audits performed in conjunction with PNAs.

Also through this rule, HUD proposes to modify these regulations to:

(1) Define an energy audit, ECMs, and "green" measures.

(2) Establish content and submission requirements for an energy audit, and facilitate the integration of the energy audit with the PNA that PHAs are required to conduct every 5 years.

While many states have not adopted auditing standards (see

<http://www.energycodes.gov/states/>), the PHA would still be required to comply with standards adopted for their state, where applicable. HUD is not at this time prescribing a specific energy audit form, so long as the required data is collected, and so long as energy auditing systems and formats are available from a number of sources, including the Department of Energy, Building Performance Institute (BPI), and the Residential Energy Services Network (RESNET).

(3) Define Core ECMs that must be considered and require further evaluation of those ECMs that have the potential for cost-effective implementation. Core ECMs generally represent commonplace conservation measures that have demonstrated track records of reducing energy

and water consumption in a cost-effective manner and that can be routinely evaluated by an energy auditor. This rule defines Core ECMs in broad categories. Examples within the categories include: changes to the building envelope such as insulation; energy-efficient mechanical equipment; low-flow water devices and other water conservation measures; energy-efficient lighting systems, including compact fluorescent lighting and motion controls; and Energy Star-certified appliances. As technology advances over time, HUD will provide further examples of ECMs in guidance.

(4) Recognize Advanced ECMs that may be addressed. PHAs are encouraged, but not required to consider Advanced ECMs, which represent alternative measures comprising advanced or experimental technology which, compared to the Core ECMs, can be more challenging to evaluate and implement. These are not alternatives that auditors would normally consider unless directed to do so, or unless there were local precedents that caused the measures to become commonly accepted local alternatives. Examples of Advanced ECMs include renewable energy technologies, such as solar and geothermal power, and green construction.

(5) Require that ECMs identified in the energy audit as cost-effective be organized into those with: paybacks of 12 years or less, paybacks of greater than 12 and less than or equal to 20 years, and paybacks of more than 20 years. The 12-year and 20-year benchmarks correspond with the benchmarks for an Energy Performance Contract (EPC).

(6) Establish minimum qualifications for an energy auditor, and

(7) Provide for extension of the requirement to complete an initial energy audit in instances where industry capacity is a constraint.

This rule would not require PHAs to implement particular ECMs; however, the energy audit must provide PHAs with accurate information about ECMs for the PHAs to consider. It is

HUD's position that when PHAs capture the cost-effectiveness data for ECMs, PHAs will implement the measures more frequently.

The proposed rule would require payback analysis for Core ECMs. Current guidance for a payback analysis is contained in the HUD publication "Energy Conservation for Housing—A Workbook," dated September, 1998 (available at http://portal.hud.gov/hudportal/HUD?src=/program_offices/public_indian_housing/programs/ph/phecc/resources), and this proposed rule would clarify and modify that guidance. The payback analysis in the proposed rule would recognize that for a replacement component, the incremental cost of a more efficient component should be used to determine cost-effectiveness. For example, if an Energy Star appliance costs \$100 more than a standard appliance with the same estimated life and the component has to be replaced, in order for the Energy Star appliance to be cost-effective, it must cost \$100 less to operate than the standard component over the designated payback period.

The result of a payback analysis would be considered in the context of this rule as a threshold for further evaluation of an ECM. A more detailed cost analysis may be conducted that includes complete lifecycle cost analysis; however, the baseline audit requires only that those lifecycle costs be generally identified, not that they be subjected to detailed cost analysis.

The proposed rule would not prevent PHAs from pursuing more advanced utility conservation and green measures, at their option. In making the distinction between Core ECMs and Advanced ECMs, HUD is recognizing extensive opportunities in public housing for simple cost-effective energy conservation improvements, while acknowledging that more advanced work may be possible in certain circumstances. The engineering and implementation costs of advanced technologies often make them impractical outside of the context of a comprehensive

redevelopment, remodeling, or incentivized program, such as an EPC or targeted grant program. HUD's view is that it is preferable to concentrate limited funding on improvements that have been proven to be generally cost-effective and broadly available to PHAs. PHAs have different priorities and local requirements with respect to utility conservation and green improvements. Many improvements, while not providing monetary cost effectiveness, provide benefits in the form of an improved living environment for residents or a contribution to broader societal environmental goals. HUD recognizes those benefits, and encourages PHAs to consider a wide variety of measures. HUD's Office of Healthy Homes and Lead Hazard Control and the Environmental Protection Agency's Indoor Air Quality Standards, as well as Office of Public and Indian Housing (PIH) notices on green building, are useful resources for a PHA that is considering a program of green improvements.

While it is HUD's position that the performance of the energy audit at the same time as the PNA would be more efficient for PHAs, particularly in circumstances where a single provider can perform both services, HUD also recognizes that circumstances may not allow a PHA to perform both services together. Accordingly, this rule does not require the performance of the energy audit simultaneously with the PNA. HUD recognizes circumstances where an energy audit would be performed outside the 5-year cycle, such as an energy audit performed in relation to an EPC or another development project, or to meet another HUD requirement. As in the case of a PNA, the first energy audit under the new final rule resulting from this proposed rule is likely to be the most costly and require the most intensive effort, with subsequent updates benefitting from the information collected in prior audits. HUD also recognizes that the capacity of the energy auditing industry might be limited in some areas, and allows for a delay in the performance of the audit in cases where local shortages in these professional services exist.

The rule does not propose to require an investment grade energy audit such as one that might be prepared for an energy performance contract or in order to evaluate a financial transaction. HUD is especially interested in receiving comments about appropriate energy audit requirements, as well as certification requirements and professional standards for energy auditors. HUD is interested in hearing from both the energy auditing industry and entities that have experience managing a real estate portfolio and have integrated energy audits into their planning process. HUD is also interested in receiving comments about any multiple purposes for which portfolio managers have used energy audits. HUD also invites comments about the proposed categories of ECMs that should be addressed in an energy audit, and conservation measures that are appropriate for use on a nationwide basis. HUD further invites comments from public housing and other interested parties on the needed capacity for performing integrated energy audits and PNAs.

III. Findings and Certifications

Paperwork Reduction Act

The information collection requirements contained in this proposed rule have been submitted to the Office of Management and Budget (OMB) under the Paperwork Reduction Act of 1995 (44 U.S.C. 3501-3520). In accordance with the Paperwork Reduction Act, an agency may not conduct or sponsor, and a person is not required to respond to, a collection of information, unless the collection displays a currently valid OMB control number.

The burden of the information collections in this proposed rule is estimated as follows:

REPORTING AND RECORDKEEPING BURDEN:

Section Reference	Number of Respondents	Number of Responses Per Respondent	Estimated Average Time for Requirement (in hours)	Estimated Annual Burden (in hours)

905.300(b)(10) ¹	620	1	65	40,300
905.300(b)(14) ²	620	1	25	15,500
905.300(b)(14)(vii) ₃	62	1	45	2,790
900.300(b)(15) ⁴	62	1	45	2,790
Total Paperwork Burden for the New Rule				61,380
Total Burden from Previous Rule (24 CFR 965.302) ⁵				29,440
Total additional burden as a result of this rule				31,940

In accordance with 5 CFR 1320.8(d)(1), HUD is soliciting comments from members of the public and affected agencies concerning this collection of information to:

(1) Evaluate whether the proposed collection of information is necessary for the proper performance of the functions of the agency, including whether the information will have practical utility;

(2) Evaluate the accuracy of the agency's estimate of the burden of the proposed collection of information;

(3) Enhance the quality, utility, and clarity of the information to be collected; and

(4) Minimize the burden of the collection of information on those who are to respond, including through the use of appropriate automated collection techniques or other forms of information technology; e.g., permitting electronic submission of responses.

Interested persons are invited to submit comments regarding the information collection requirements in this rule. Under the provisions of 5 CFR part 1320, OMB is required to make a decision concerning this collection of information between 30 and 60 days after today's

¹ Burden of energy audit performed once every 5 years for each of 3,200 PHAs, including data collection and site inspection.

² Burden of analysis and comprehensive report.

³ Optional burden of expanded analysis as directed by PHA, estimated to be exercised by 10 percent of respondents.

⁴ Optional burden of considering green measures as directed by PHA, estimated to be exercised by 10 percent of respondents.

⁵ OMB Control No. 2577-0062

publication date. Therefore, a comment on the information collection requirements is best assured of having its full effect if OMB receives the comment within 30 days of today's publication. This time frame does not affect the deadline for comments to the agency on the proposed rule, however. Comments must refer to the proposal by name and docket number (FR-5361) and must be sent to:

HUD Desk Officer,
Office of Management and Budget,
New Executive Office Building,
Washington, DC 20503
Fax number: (202) 395-6947

and

Collette Pollard
Reports Liaison Officer,
Department of Housing and Urban Development,
451 7th Street, SW, Room 4160,
Washington, DC 20410

Interested persons may submit comments regarding the information collection requirements electronically through the Federal eRulemaking Portal at <http://www.regulations.gov>. HUD strongly encourages commenters to submit comments electronically. Electronic submission of comments allows the commenter maximum time to prepare and submit a comment, ensures timely receipt by HUD, and enables HUD to make them immediately available to the public. Comments submitted electronically through the <http://www.regulations.gov> website can be viewed by other commenters and interested members of the public. Commenters should follow the instructions provided on that site to submit comments electronically.

Regulatory Planning and Review

OMB reviewed this proposed rule under Executive Order 12866 (entitled “Regulatory Planning and Review”). This rule was determined to be a “significant regulatory action,” as defined in 3(f) of the order (although not an economically significant regulatory action, as

provided under section 3(f) (1) of the order). The docket file is available for public inspection between the hours of 8 a.m. and 5 p.m. weekdays in the Regulations Division, Office of General Counsel, Department of Housing and Urban Development, 451 7th Street, SW, Room 10276, Washington, DC 20410-0500. Due to security measures at the HUD Headquarters building, an advance appointment to review the docket file must be scheduled by calling the Regulations Division at 202-708-3055 (this is not a toll-free number). Hearing- or speech-impaired individuals may access this number through TTY by calling the toll-free Federal Information Relay Service at 800-877-8339.

This proposed rule would revise HUD's energy audit requirements applicable to HUD's public housing program for the purpose of clarifying such requirements and defining energy-efficient measures and audit procedures. It is estimated that the cost burden to PHAs could be up to \$40 million every 5 years or \$8 million annually. Notwithstanding the relatively modest cost to perform energy audits, there is a potential for PHAs to realize substantial savings. Each year, about \$1.2 billion is budgeted for utilities for housing authorities. Assuming that this rule is effective and energy audits are successfully translated into energy savings, where, for example, only 10 percent efficiency and cost were achieved, it would translate into about \$120 million in budget savings annually that could be affected to other uses. When tenant-paid utilities are included, the annual savings may be up to \$173 million under the same conditions. Notwithstanding the potential benefit, this proposed rule is not economically significant as defined by Executive Order 12866 and OMB Circular A-4.

The potential costs of the rule are as follows. The new Energy Audit Rule does not change the current requirement that all PHAs perform an energy audit at least once every 5

years. However, there will be an economic impact to the extent that the new standards for performance exceed the standard of performance for the state in which each PHA is located.

The cost to perform the enhanced energy audit can be approximated using existing examples and HUD's own experience. HUD's Office of Affordable Housing Preservation (OAHP) manages the Green Retrofit Program (GRP), which involves OAHP direct engagement of providers to perform Physical Needs Assessment and Energy Audits for affordable housing projects. The GRP energy audit includes all of the components generally understood to be found in a baseline energy audit. HUD is using the GRP format as a source for the development of energy audit standards to be used in public housing, and the energy audit standards in the new rule will be comparable in complexity/comprehensiveness. OAHP has shared a summary of its costs to perform PNAs during Fiscal Year 2009/10 using its format for a set of 66 projects nationwide. These projects averaged 96 units per project. The average cost for the energy audit portion of the GRP for these projects was reported as \$3,314 per project or \$32.86 per unit.

In the absence of detailed cost figures for the energy audits currently being performed by PHAs, the most conservative approach to estimating the burden is to use the GRP figure of \$32.86 per unit. Even without a mitigating adjustment for the current economic investment that PHAs are making to this activity, the economic burden to PHAs would be \$39,864,536 ($\$32.86 \times 1,213,163$) every 5 years, or \$7,972,907 annually. A mitigating adjustment of 50 percent to account for the existing burden is not an unreasonable assumption. Such an adjustment would reduce the 5-year and annual additional burden to \$19,932,268 and \$3,986,453, respectively.

There are also benefits to the rule. Nationwide, PHA-paid utility costs total around \$1.3 billion annually, or about 25 percent of the costs to operate public housing. It is estimated that

an additional \$430 million in utility costs are paid by residents, but indirectly are paid by PHAs in the form of utility allowances that reduce resident rents. Assuming that this rule is effective and, for example, only 10 percent efficiency were achieved, that would translate into about \$173 million in budget savings annually that could be realized and affected to other uses.

Unfunded Mandates Reform Act

Title II of the Unfunded Mandates Reform Act of 1995 (2 U.S.C. 1531-1538) (UMRA) establishes requirements for federal agencies to assess the effects of their regulatory actions on state, local, and tribal governments and the private sector. This rule does not impose any federal mandate on any state, local, or tribal government or the private sector within the meaning of UMRA.

Environmental Impact

This proposed rule that does not direct, provide for assistance or loan and mortgage insurance for, or otherwise govern, or regulate, real property acquisition, disposition, leasing, rehabilitation, alteration, demolition, or new construction, or establish, revise or provide for standards for construction or construction materials, manufactured housing, or occupancy. Accordingly, under 24 CFR 50.19(c)(1), this proposed rule is categorically excluded from environmental review under the National Environmental Policy Act of 1969 (42 U.S.C. 4321).

Regulatory Flexibility Act

The Regulatory Flexibility Act (RFA) (5 U.S.C. 601 et seq.) generally requires an agency to conduct a regulatory flexibility analysis of any rule subject to notice and comment rulemaking requirements, unless the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. All PHAs have been required to complete energy audits, which essentially review building systems for the purpose of assessing whether

the project would benefit from energy conservation measures. This rule also clarifies the scope of the energy audit that would be made pursuant to the existing energy audit requirements, rather than creating a new requirement for PHAs. To the extent that the standards for the energy audit pursuant to this rule are more burdensome than the current state standards required for energy audits, there may be some incremental cost to some PHAs to perform audits to this standard. However, this cost would be miniscule fraction of each PHA's capital grant, and so would not be a significant economic impact. For example, making the most conservative assumption—that each small PHA would be required to hire an independent auditor rather than using existing staff time—the incremental cost would be \$32.86 per unit per 5 years, or \$6.57 per unit per year. The capital fund grant averages \$1595 per unit, per year, so that the cost as a percentage of capital grant is only 0.4 percent. In actuality, the costs may be lower, because at least some small PHAs will have the staff resources to perform the audit in-house.

Notwithstanding the determination that this rule would not have a significant impact on PHAs, HUD specifically invites any comments regarding any less burdensome alternatives to this rule that will meet HUD's objectives as described in this preamble.

Executive Order 13132, Federalism

Executive Order 13132 (entitled "Federalism") prohibits, to the extent practicable and permitted by law, an agency from promulgating a regulation that has federalism implications and either imposes substantial direct compliance costs on state and local governments and is not required by statute or preempts state law, unless the relevant requirements of section 6 of the Executive Order are met. This rule does not have federalism implications and does not impose substantial direct compliance costs on state and local governments or preempt state law within the meaning of the Executive Order.

Catalog of Federal Domestic Assistance Number

The Catalog of Federal Domestic Assistance number for 24 CFR part 905 is 14.872.

List of Subjects in 24 CFR 905

Grant programs-housing and community development, Public housing, Reporting and recordkeeping requirements.

Accordingly, for the reasons stated in the preamble, HUD proposes to amend 24 CFR part 905, as proposed to be revised at 76 FR 6661, February 7, 2011, as follows:

PART 905--THE PUBLIC HOUSING CAPITAL FUND PROGRAM

1. The authority statement for part 905 continues to read as follows:

Authority: 42 U.S.C. 1437g, 42 U.S.C. 1437z-2, and 3535(d).

Subpart C-- General Program Requirements

2. Amend § 905.300 by adding paragraphs (b)(10) through (b)(15) to read as follows:

§ 905.300 Capital Fund submission requirements.

* * * * *

(b) * * *

(10) Energy audits. All PHAs shall complete an energy audit for each PHA-owned project under management, not less than once every 5 years, unless otherwise specified in this part.

(i) Energy audits consist of reviews of building systems to evaluate and identify projected costs, savings, and payback periods related to implementing any of a variety of potential energy conservation measures. Energy audits required by this part may, but are not

required to, also identify green measures, or measures that do not result in energy savings, but which instead result in environmental benefits, such as improving indoor air quality.

(ii) The purpose of this subpart is to provide minimum standards with respect to the performance of energy audits. PHAs are not required to implement any specific energy conservation measure identified in an energy audit, except to the extent required by other statutes, rules, or regulations. An energy audit, however, must provide PHA staff with accurate information about the condition of the PHA's properties with respect to energy conservation measures and to the payback associated with energy conservation measures. The audit may also provide information about the environmental or potential health benefits of green measures.

(iii) PHAs shall integrate utility management with capital planning, to maximize energy conservation and efficiency measures in a comprehensive approach to building design, development, and maintenance. Energy audits shall be conducted in conjunction with HUD's required PNA. Any planned, ongoing, or completed energy, utility, and green improvements must be captured in the PNA in a form and manner prescribed by HUD.

(iv) PHAs shall not be required to complete an energy audit for any project that is less than 5 years old at the time the PHA is required to complete the energy audit. PHAs shall not be required to complete an energy audit for any project for which a removal from the public housing inventory has been approved by HUD, such as a demolition, disposition, conversion to homeownership, or other conversion action.

(v) The first two energy audits completed under this section shall be completed in accordance with a time frame delineated by HUD.

(vi) When a PHA is required to submit an energy audit pursuant to this part for the first time, a PHA has the option of submitting an existing audit completed within the last 2 years if:

(A) The audit meets the data requirements under this section; and

(B) The audit was completed by an auditor that meets the requirements of this section.

(vii) When a PHA is required to complete and submit an energy audit for the first time, a PHA may request an additional 2 years to submit the audit if it cannot find a qualified auditor.

To obtain HUD's approval, a PHA must provide documentation to its field office that demonstrates it issued a well-structured Request for Proposal (RFP) in accordance with 24 CFR 85.36, and received no bids from qualified respondents.

(11) Energy and water conservation measures (ECMs). ECMs are devices, systems, or processes that may reduce utility and energy consumption. For the purposes of this subpart, ECMs include "Core ECMs" and "Advanced ECMs."

(12) Core ECMs are defined as broadly available energy conservation measures that have proven track records of reducing energy and water consumption in a cost-effective manner. Core ECMs include, but are not limited to, the following ECM categories:

(i) Building envelope (ECMs such as, but not limited to, wall or attic insulation, roofs, storm doors, weatherization, radiant barriers, and windows);

(ii) Heating, cooling, and other mechanical equipment systems and controls (ECMs such as, but not limited to, energy efficient furnaces, air handlers, fans, condensers, boilers, hot water heaters, programmable thermostats, equipment refurbishment and commissioning, duct sealing, duct insulation, pipe insulation, water heating controls, and ventilation);

(iii) Water conservation (ECMs such as, but not limited to, low flow toilets, faucets, showerheads, and alternate irrigation);

(iv) Power, lighting systems, and controls (ECMs such as, but not limited to, compact fluorescent lighting, LED fixtures and exit signage, photocell controls, and motion controls);

(v) Appliances (ECMs such as, but not limited, to Energy Star-rated refrigerators, clothes washers, and dishwashers).

(13) Advanced ECMs are defined as alternative measures comprising advanced or experimental technology which, compared to Core ECMs, can be more challenging to evaluate and implement. These are not alternatives that auditors would normally consider unless directed to do so, or unless there were local precedents that caused the measures to become commonly accepted local alternatives. Advanced ECMs include, but are not limited to:

- (i) Fuel conversions;
- (ii) Conservation technologies (e.g., green construction techniques, building energy management systems, and xeriscaping⁶); and
- (iii) Energy generating technologies and renewable energy systems (e.g., solar, geothermal, and cogeneration⁷).

(14) Energy audit technical requirements and reporting. (i) An energy audit shall analyze utility consumption, review property and building data, and evaluate Core ECMs that could result in cost-effective energy and water conservation. At the option of the PHA, an energy audit may also evaluate Advanced ECMs and green measures.

(ii) Energy audits for public housing shall at a minimum consider the Core ECMs and provide a comprehensive assessment report that includes:

- (A) A summary review of the findings of any previous energy audits;
- (B) An assessment of the existing property physical components affecting energy consumption, including an evaluation of the performance and condition of components within the Core ECM categories.

⁶ Xeriscaping is the conservation of landscape irrigation water through creative and efficient landscape design.

⁷ Cogeneration is the use of the byproduct of energy generation, primarily thermal energy, for other purposes that would normally require additional energy.

(C) An assessment of building operations, maintenance, and resident education as it relates to energy conservation and green practices;

(D) Analysis of fuel, electricity, and water bills and usage for at least the PHA-held accounts for trend analysis and industry benchmarking, and for tenant-held accounts where usage information is in the possession of the PHA;

(E) Identification and evaluation of all energy conservation measures considered, which shall include at least those that have the potential for cost-effective implementation;

(F) Categorization of recommended energy conservation measures into improvements with payback periods of 12 years or less, greater than 12 and less than or equal to 20 years, and more than 20 years;

(G) Projected cost of ECMs, and where a standard (less energy-efficient) building component is available, the projected cost of the standard component and the incremental cost of the ECM;

(H) Projected annual savings in water consumption;

(I) Projected annual energy consumption savings in the appropriate unit of measurement (i.e., kilowatt-hours, British Thermal Unit (BTU)⁸, gallons, cubic feet etc.) for recommended ECMs;

(J) Projected annual savings in dollars for recommended ECMs;

(K) Expected useful life of all ECMs and green measures;

(L) Identification of life cycle costs or savings of ECMs and green measures, including disposal costs and maintenance costs; and

⁸ A BTU is defined as the amount of heat required to raise the temperature of 1 pound (0.454 kg) of liquid water by 1 °F (0.556 °C) at a constant pressure of one atmosphere.

(M) Energy auditor recommendations for optimal sequencing of ECM implementation for maximum benefit.

(iii) The energy audit will identify related physical work items that must be implemented at the same time to assure that a specific ECM can provide the maximum savings calculated, as well as to maintain health and safety (e.g., the installation of an energy-efficient boiler may require that new, wider distribution lines be installed or rerouted to maximize the potential savings that could be realized from the boiler; and a weatherization project may require adjustments to ventilation systems to maintain adequate fresh air exchange). These complementary activities should be viewed as part of an improvement package required to achieve the overall energy savings.

(iv) Data and findings from prior energy audits that are deemed reliable and remain valid may be carried over to subsequent audits.

(v) Where ECMs would replace existing components at the end of their useful life, the payback period shall be calculated by dividing the incremental cost of replacement with an ECM as compared with a standard component, by the projected annual savings of the ECM as compared with a standard component. Where ECMs would replace existing components before the end of their useful life (early replacement), the payback period calculation shall be modified to add the value of the remaining useful life of the component being replaced to the incremental cost of the ECM. This payback period calculation shall be modified in a manner acceptable to HUD. Where ECMs would improve a project by adding new systems or new functionality, such as in the case of energy-generating equipment, the payback period shall be calculated by dividing the total cost of the ECM by the projected annual savings.

(vi) The energy audit shall differentiate between activities that are routine operating and maintenance activities and ECMs that are capital expenditures and can be financed with capital funds. Cleaning or changing air filters on certain mechanical equipment is a routine operational maintenance function that may result in energy conservation but is not an eligible capital expense.

(vii) For purposes of this part, the potential for cost-effective implementation of an energy conservation measure must be evaluated when the payback period is equal to or less than the estimated useful life of the component or 12 years, whichever is less. Complete lifecycle cost analysis to refine cost impacts of energy conservation measures is recommended for those measures initially determined to be cost-effective.

(viii) The energy auditor shall report on a project-level basis. The energy auditor shall submit a baseline report to the PHA and may submit an expanded report, as noted below. The report shall include the elements in § 905.300(b)(14)(i) for at least the ECMs identified in § 905.300(b)(14)(i)(D). The baseline report shall include a recommendation as to whether the PHA should complete more extensive engineering reviews to determine whether consideration of Advanced ECMs or others would be warranted. The energy auditor's recommendation shall be based upon the potential lifecycle cost savings of the ECMs, the complexity associated with implementing the ECMs, and the age and condition of the project as a whole. If the PHA directs the energy auditor to complete additional analysis on these ECMs, the energy audit shall be expanded to include that analysis.

(ix) There may be occasions outside of the 5-year cycle when an energy audit is appropriate and necessary to comply with state-specific energy policies, participate in local utility company incentive programs, pursue an energy performance contract, or evaluate the

financial condition of a project. Nothing in this subpart is to be construed as prohibiting an energy audit at any time that the PHA determines it to be in the interest of the project.

(x) Capital or operating funds may be used for energy audits whenever they are performed.

(xi) Energy audits required in this section do not need to be investment grade energy audits⁹, but must cover all projects, and be sufficient to determine projected savings and to prioritize potential work based on the goals and objectives identified by the PHA (e.g., quickest payback, largest payback, speed of implementation, etc.). Any energy audit may rely on data from a HUD-required prior energy audit (such as described in part § 905.300(b)(14)(i) or performed in relation to an energy performance contract) conducted on the same property, if the previous audit was completed within 2 years of the time of a required PNA or energy audit, and if the previous audit meets the data requirements of the audits prescribed by this section.

(xii) While the timing of an energy audit is coordinated with a PNA, there are several instances when HUD may require a current or updated energy audit. These include but are not limited to:

(A) When requesting HUD permission to transfer excess cash from one project to another;

(B) At the direction of HUD, when HUD energy consumption data or industry benchmarks indicate that a project's energy consumption levels are excessive when compared to similar projects within the project's climatic zone;

(C) When required to substantiate an exception to the Total Development Cost Limit in reference to 24 CFR 941.306; and

⁹ Investment Grade Energy Audits are prepared specifically to support a financial transaction such as an energy performance contract.

(D) When the PHA is substandard under any applicable performance rating system used by HUD to assess project-level performance both in terms of operations and financial condition.

(xiii) The energy auditor shall be experienced in the performance of residential building energy audits and shall hold a current, valid certification from a state energy audit certifying agency for the state where the property is located or a nationally recognized energy audit certification provider, or hold other certification acceptable to HUD or expressed in HUD guidance.

(15) Green measures. (i) Green measures are products, systems or processes that do not necessarily conserve energy, but result in other environmental benefits. These include, for example: use of low volatility or nonvolatile organic compound cabinets, flooring, paints, or sealants; physical changes required to effectively implement integrated pest management; and hazardous waste or construction debris removal processes.

(ii) An energy audit shall identify green measures if the PHA directs the energy auditor to include them in the energy audit, but they are not required to be included. Where an energy audit includes green measures, it shall identify the projected cost of the green measure, and where a standard building component is available, it shall identify the projected cost for the standard component and the incremental cost of the green measure.

Dated: October 21, 2011

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[FR-5507-P-01]

[FR Doc. 2011-29640 Filed 11/16/2011 at 8:45 am; Publication Date: 11/17/2011]